Loa, Kilauea, and Hualaloi, (which are, we believe, the only three active craters in the island of Hawaii, and, for that matter, in the whole of the Sandwich Islands), but the date 1851 is given in the Encyclopedia Britannica in addition to those given in Mr. Lyons' two articles, and there are discrepancies enough between the exact dates of eruptions and the sun spots to make one wonder how there can be any causal connection between the two. In some cases the eruptions appear to precede the sunspots, in other cases they follow. In one case the eruptions between 1851 and 1859 seem to have favored the maximum sun spots quite as much as the minimum.—ED.

OBSERVATIONS AT RIVAS, NICARAGUA.

The records contributed for many years by Dr. Earl Flint, at Rivas, Nicaragua, include barometric readings. His present station is at 11° 26′ N., 85° 47′ W. The observations at 7:17 a. m., local time, are simultaneous with Greenwich 1 p. m. The altitude of this barometer is now said to be 4 feet above ground; the thermometer 6 feet above ground; the rain gage 7 feet above ground. The ground is 210 feet above sea level. Until the barometer has been compared with a standard it seems hardly necessary to publish the daily readings. The wind force is recorded on the Beaufort scale, 0–12. When cloudiness is less than $\frac{1}{10}$, the letter "F," or "Few," is recorded.

This station is situated on the western shore of Lake Nicaragua, not far from the eastern end of the western division of the Nicaragua Canal. The volcano Ometepe, on an island in Lake Nicaragua, is about 10 miles northeast of the station. Dr. Flint's records occasionally mention the presence of clouds on the summit of this mountain.

Dr. Flint's reports to the Weather Bureau now embrace two distinct features, namely, the simultaneous morning observations and the daily climatological summary, as given in the two following tables for each month.

Simultaneous observations at 1 p. m. Greenwich (or 7:17 a. m. local) time, July, 1899.

Date.	Temperature.		Wind.		Upper clouds.			Lower Clouds.		
	Air.	Dew-point.	Direction.	Force.	Kind.	Amount.	Direction from.	Kind.	Amount.	Direction from.
	°	°								
1	79	72	ne.	5	cs.	2	sw.	k.	2	ne.
2	78	74	ne.	6	.....	.....	.....	kn.	10	ne.
3	76	73	ne.	5	.....	.....	.....	ak.,k.	1,9	ne.
4	77	75	ne.	6	.....	.....	.....	k.	8	ne.
5	78	71	ne.	7	ck.	10	se.	.....	.....	.....
6	80	73	ne.	5	ck.	10	sw.	k.	Few	ne.
7	80	73	ne.	6	ck.	8	sw.	ak.	2	ne.
8	80	73	ne.	7	.....	.....	.....	ak.	4	ne.
9	80	73	ne.	5	.....	.....	.....	k.	10	ne.
0	80	73	ne.	5	cs.,ck.	9	sw.	k.	1	ne.
1	80	73	ne.	5	ck.	10	sw.	k.	Few	ne.
12	76	73	n.	0	.....	.....	.....	ak.	10	n.
13	78	74	ne.	3	.....	.....	.....	ak.,k.	9	ne.
14	77.5	73	ne.	0	.....	.....	.....	f.k.	10	ne.
15	78	75	ne.	3	.....	.....	.....	k.	10	ne.
16	79	75	ne.	5	.....	.....	.....	f.k.	10	ne.
17	81	77	ne.	6	ck.	5	sw.	f.k.	1	ne.
18	81	74	ne.	6	.....	.....	.....	f.k.	9	ne.
19	76	73	ne.	6	.....	.....	.....	kn.	10	ne.
20	79	75	ne.	3	.....	.....	.....	f.k.	9	ne.
21	75	73	n.	0	.....	.....	.....	kn.	10	n.
22	77	73	ne.	5	ck.	8	sw.	f.k.	1	ne.
23	78.5	73	n.	5	ck.,c.	10	sw.	k.	Few	ne.
24	77	73	ne.	3	.....	.....	.....	f.k.	10	ne.
25	78	75	ne.	2	.....	.....	.....	f.k.	10	ne.
26	77	74	se.	3	.....	.....	.....	k.	10	se.
27	75.5	73	ne.	0	.....	.....	.....	ak.,k.	9	ne.
28	77	74	ne.	3	.....	.....	.....	ak.,f.k.	8	ne.
29	79	75	ne.	4	.....	.....	.....	ks.,k.	1	ne.
30	79	75	ne.	5	ck.	6	sw.	k.*	Few	ne.
31	77.5	74	se.	3	.....	.....	.....	k.	8	se.
Means	78.2	.....	.....	.....	.....	....	.....	.....	.....	.....
Departure	+1.3	.....	.....	.....	.....	.....	.....	.....	.....	.....

*On Ometepe.

Climatological observations for twenty-four hours ending at 7:17 a. m. local (or 1 p. m. Greenwich) time, July, 1899.

Date.	Temperature.		Wind.		Average cloudiness.	Total rainfall.
	Maximum.	Minimum.	Prevailing direction.	Maximum force.		
	°	°				*Inches.*
1	84	76	ne.	4	8	*0.00
2	84.2	78	ne.	6	7	0.00
3	84	77	ne.,se.	6	10	0.93
4	84.5	75	ne.	5	9	0.08
5	86.5	78	ne.	6	6	0.00
6	89	77	ne.	7	10	0.00
7	86.5	78	ne.	6	9	0.00
8	89	78.5	ne.	6	4	0.00
9	87	79	ne.	7	6	0.04
10	89	79	ne.	5	7	0.00
11	88	78.5	ne.	5	8	T.
12	87	79	ne.	5	9	0.11
13	83	75	ne.	4	9	T.
14	87	77	ne.	4	8	0.16
15	87	76.5	ne.	4	9	0.20
16	84	77	ne.,se.	4	10	0.70
17	84.2	77	ne.	5	9	0.00
18	86.6	77	ne.	6	2	0.00
19	86	79	ne.	7	7	T.
20	87	75	ne.	6	5	0.20
21	87	78	ne.	4	9	2.09
22	83	75	n.,ne.	5	10	2.32
23	84.5	76	ne.	6	5	0.00
24	86	77	ne.	7	9	0.40
25	88	77	ne.	6	10	0.83
26	83	77	ne.	5	8	1.80
27	77.2	75	ne.,se.	5	10	0.71
28	83	75	ne.,se.	3	7	0.00
29	85	76	ne.	5	4	0.00
30	88	77	ne.	5	5	0.10
31	87	78	ne., e.	5	7	0.02
Sums	.....	.....	.....	.....	.....	10.69
Departure	.....	.....	.....	.....	.....	+3.93

*The rainfall at 3 p. m., June 30, was reported on that date. Strictly speaking, therefore, the rainfall for June is 7.53 and that for July is 10.85, and the 0.08 measured at 1 p. m. of July 31 belongs to the record for August.

Since early in June farmers have asked me for forecasts of rain, but to all I have replied, "No rain until the northeast trades cease." On the 15th the wind veered to southeast, with sprinkles at 9 a. m., but then back to northeast. Little hope for the first corn crop. Great complaints of dryness from Costa Rica. On the 31st, although the July rains are 3.93 above normal, yet there is still complaint of dryness.

THE TORNADO AT NEW RICHMOND, WIS.

By Prof. O. G. LIBBY, Madison, Wis.

The Editor has received from Prof. O. G. Libby, instructor in history at the University, Madison, Wis., quite a full special report on the tornado of June 12, 1899, that destroyed the City of New Richmond, Wis., from which he makes the following extracts:

I observed the ruins and other phenomena for two weeks after the tornado occurred, while aiding the sufferers. Mr. Emil Gerde, of Star Prairie, Wis., stated that he saw the storm approach and watched its first destructive action. He states that the cloud had three parts, a central cone larger than the others and showing a square ragged base, with the body twisted like a rope. On either side of this was a smaller cone that swung free in and out, to and fro, licking up a building, leaping and swaying as the cloud advanced. Sometimes a considerable distance separated them, and then again they would be close together. The western cone was larger than the eastern. The cones were of a yellowish tint, like flames, especially the central one. Intense darkness preceded the storm, the noise was like that of an immense wheel turned by machinery, in which there was considerable slack, so that the sound was uneven. The sun shone out after the storm. The reports from Polk County indicate three paths of destruction, the central one being the worst of all. I crossed the central path twice in driving near Clear Lake, where the bushes were stripped of bark and old logs lying partly in the ground, had been moved for some distance. Even on a sloping hill covered with small bushes, everything was bruised and pounded flat, as though logs had been rolled or dragged over the surface.

Among the numerous details given by Mr. Libby, we select